



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

September 24, 2008

MEMORANDUM

SUBJECT: National Remedy Review Board Recommendations for the Waukegan Harbor Operable Unit of the Outboard Marine Corp. Superfund Site

FROM: David E. Cooper, Chair
National Remedy Review Board

A handwritten signature in black ink, reading "David E. Cooper", is written over the printed name of the sender.

TO: Richard Karl, Director
Superfund Division,
U.S. EPA Region 5

Purpose

The National Remedy Review Board (the Board) has completed its review of the proposed cleanup action for the Waukegan Harbor Operable Unit (OU) of the Outboard Marine Corp. (OMC) Superfund Site in Waukegan, Illinois. This memorandum documents the Board's advisory recommendations.

Context for Board Review

The Administrator announced the Board as one of the October 1995 Superfund Administrative Reforms to help control response costs and promote consistent and cost-effective decisions. The Board furthers these goals by providing a cross-regional, management-level, "real time" review of high cost proposed response actions prior to their being issued for public comment. The Board reviews all proposed cleanup actions that exceed its cost-based review criteria.

The Board evaluates the proposed actions for consistency with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and relevant Superfund policy and guidance. It focuses on the nature and complexity of the site; health and environmental risks; the range of alternatives that address site risks; the quality and reasonableness of the cost estimates for alternatives; regional, state/tribal, and other stakeholder opinions on the proposed actions; and any other relevant factors.

Generally, the Board makes advisory recommendations to the appropriate Regional decision maker. The Region will then include these recommendations in the administrative



record for the site, typically before it issues the proposed cleanup plan for public comment. While the Region is expected to give the Board's recommendations substantial weight, other important factors, such as subsequent public comment or technical analyses of response options, may influence the Region's final decision. The Board expects the regional decision maker to respond in writing to its recommendations within a reasonable period of time, noting in particular how the recommendations influenced the proposed cleanup decision, including any effect on the estimated cost of the action. It is important to remember that the Board does not change the Agency's current delegations or alter in any way the public's role in site decisions.

Overview of the Proposed Action

The Outboard Marine Corporation (OMC) manufactured outboard motors at the site for approximately 50 years until it declared bankruptcy in December 2000. The facility discharged an estimated 300,000 pounds of PCB-containing oils through an outlet into Waukegan Harbor until OMC plugged the sewer lines in 1976. EPA issued a Record of Decision (ROD) in 1984 (amended in 1989) to clean up Waukegan Harbor sediment after documenting high PCB contaminant levels in the sediment, as well as on the OMC Plant 2 facility grounds. OMC dredged about 38,000 cubic yards of sediment from the north harbor area to achieve a 50 ppm PCB cleanup level. The proposed remedial response action would be the final response action for this operable unit but likely will not be the final remedial action for the entire OMC site. The proposed action would remove residual PCBs from the harbor via hydraulic dredging as well as provide a barrier between benthic organisms and residual PCBs in sediment that cannot be easily removed by dredging. Achievement of the surface weighted average concentration (SWAC) goal of 0.20-0.25 ppm PCB would reduce the available PCB mass leading to contamination of harbor-caught fish and would thus be protective of human health.

NRRB Advisory Recommendations

The Board reviewed the information package describing this proposal and discussed related issues with Kevin Adler, remedial project manager, and Erin Rednour of the Illinois Environmental Protection Agency on June 18, 2008. Based on this review and discussion, the Board offers the following comments:

1. In the presentation to the Board, the Region provided very limited information on the relationship between PCB concentrations in the harbor sediments and the concentration of PCBs found in harbor fish at this specific site. A good understanding of the relationship between sediment concentrations and fish tissue concentrations is critical to understanding the anticipated effectiveness of the remedy. The package states:

To achieve a significant reduction in PCB bioavailability in the sediment, a target removal level of 1 ppm PCBs was set, based on cleanup goals established for other PCB sediment cleanup sites in the Region. At the other sites, removal and/or covering of sediment at 1 ppm or greater PCBs was determined to allow for the achievement of a SWAC of about 0.25 ppm PCBs for sediment.

The Board recommends that the Region revise the decision documents to include a more detailed discussion of the relationship between PCB concentrations in the harbor sediments and in the harbor fish. This discussion should include an analysis of the factors the Region used to determine the applicability of the 1 ppm PCB cleanup goal to this site. The Region should consider whether existing fish tissue data provide further insight into the relationship between current harbor sediment PCB concentrations and the current fish tissue PCB concentrations. Typically, one expects a first order decay curve in the relationship between contaminant concentrations in sediment and fish, suggesting that as contaminant concentrations approach background, the same degree of contaminant concentration reduction in sediment will have a smaller reduction in fish tissue than at higher sediment concentrations. The Region should consider calculating the amount of PCB mass removal per volume of material dredged as a way to maximize the efficiency of the remedial action.

2. Based on the material presented to the Board, remedial action objectives (RAOs) at the site are unclear. The Board could not tell whether the RAO was to meet a specific fish tissue concentration, a cancer risk target in humans, a surface weighted average contaminant concentration in sediments, or to remove all contaminants above 1 ppm. The Board recommends that the decision documents clarify which of these potential objectives are actually RAOs that will be the basis for evaluating the remedy's success. In addition, the Region may want to consider whether a more appropriate RAO would be to reduce fish tissue concentrations to area background concentrations for comparable fish tissue. This concentration may not be equal to goals for risk-based fish tissue concentration.

3. Similarly, from the materials presented to the Board, it was unclear whether the Region was basing acceptability of fish tissue concentrations for human consumption on State fish consumption advisory tissue concentrations or the fish tissue concentrations developed in the EPA risk assessment. The Board recommends that the Region clearly state which one is being used in the remedy objectives.

4. If an RAO for this remedy is reduction of PCB concentrations in fish tissue, the Board recommends that the Region refine this RAO so that the objective is likely to be measurable and achievable. Factors that the Region may want to consider in refining this RAO include fish species, size, sex, time of collection, as well as the sampling location. These parameters can be critical in decreasing data variability and in demonstrating remedial success. The Board is concerned that without greater specificity, improvements in environmental conditions resulting from the remedial action will be difficult to document. The Board recommends that decision documents or other technical documents developed post-ROD as part of the remedial design monitoring and maintenance program provide greater specificity in describing how contamination levels will be measured. The Region should consult the draft guidance for monitoring fish to evaluate remedy effectiveness for more information. (see Sediment Assessment and Monitoring Sheet #1: *Using Fish Tissue Data to Monitor Remedy Effectiveness*, OSWER Directive 9200.1-77D, October 2007). In addition, the decision documents should

include estimated timeframes for meeting the RAO and when the fish advisories can be eliminated.

5. It was not clear to the Board what role the Region intends for the beneficial use impairment corrections. The Board recommends that the Region clarify that the objective of the remedial action is to protect human health and the environment; as such, any reduction of beneficial use impairments should be an ancillary benefit rather than an additional goal of the action.

6. The package presented to the Board did not include an alternative to remove only the hot spot areas (e.g., >10 ppm PCBs in sediments). Hot spot removal might decrease the amount of sediment that would need to be disposed of onsite, decrease the size of the disposal cell, decrease the amount of water that would require treatment, and decrease the amount of ammonia to be disposed. Given that average PCB concentrations are already approximately 2 ppm and the SWAC goal is 0.25 ppm, a better understanding of the relationship between contaminant concentrations in sediment and fish tissue (discussed in comment 1), should improve the Region's ability to evaluate whether hot spot removal can effectively reduce fish tissue concentrations while producing less ammonia and requiring less disposal. The Board recommends that the Region evaluate an alternative that considers hot spot removal of contaminated sediment. The Region should also consider whether monitored natural recovery could be effective in reducing the final increment of elevated PCB concentrations to reach the SWAC of 0.25 ppm.

7. The Board notes that the US Army Corps of Engineers (USACE) has not dredged the harbor in many years, and the cost of dredging uncontaminated sediments is significant. To the extent that the USACE would have had to spend this money even if the harbor was not contaminated, the Board recommends that the Region investigate the opportunity for a mutually beneficial partnership with USACE (i.e., whereby EPA pays the incremental cost caused by the presence of contaminated sediments above the cost of ordinary navigational dredging.) Such a partnership could potentially include industries that rely on shipping or the City of Waukegan, as appropriate.

8. In the presentation to the Board, the status of the baseline risk assessments for both human health and ecological risk was not clear. The Board recommends that the Region ensure that both baseline risk assessments have been completed in order to select a remedy consistent with CERCLA, the NCP, and Agency guidance. The decision documents should make use of both assessments to provide the rationale and basis for the proposed action. The package presented to the Board indicates that the risk to recreational fishers is approximately half of the risk to subsistence fishers. However, the exposure assumptions presented would suggest this difference should be a factor of four. The Region should confirm the validity of its risk calculations and explain the basis of the risks in greater detail in the decision documents to clarify this apparent discrepancy. In addition, in discussing ecological risks, the package presented to the Board indicated the harbor was of "little value as habitat." However, the human

health risk assessment assumes that subsistence fishers are eating 225 meals per year of harbor caught fish. These two statements seem inconsistent and the Region should clarify this issue in the decision documents.

9. The material presented to the Board appears to indicate that the goal of the remedy may be "...to reduce harbor-caught fish consumption health risks to within the Superfund risk range of 1×10^{-4} to 1×10^{-6} excess cancer risk and to achieve a Hazard Quotient of 1 or less." However, the human health risks presented to the Board for subsistence fishers were only greater than the upper end of the risk range target by a factor of five. It was not clear to the Board from the material presented whether the Region is fully taking into account the possible risk reduction that could be achieved with more robust outreach (e.g., more education, more surveys to understand consumption patterns). The Board recommends that the Region consider whether fishing bans or other institutional controls could be used to further reduce risks at the site. The Region should explain in its decision documents how ongoing outreach activities support implementation of institutional controls.

10. Based on the information presented to the Board, it was unclear how the federal authorization of the channel is being considered by the Region in selecting a remedy that addresses contaminated sediments and makes the channel available for USACE to maintain at the specified depth. The Board recommends that the Region further evaluate all of the potential legal requirements (including, for example the Clean Water Act) in selecting a remedy for the site. The Board also recommends that the Region clarify the role, if any, of beneficial use impairments.

11. The Board notes that the resuspension of fine sediment during dredging, and potentially following the placement of cover material, may impact the attainment of the RAOs. The Board recommends that the Region evaluate the impact of resuspension and sedimentation of fine-grained particles on the implementation and effectiveness when considering remedial action alternatives.

12. The estimated total present worth value cost for Alternative #2 (the Region's preferred remedy), as presented in the package, is approximately \$1.9 million more than Alternative #3. The cost difference is primarily associated with dredging everywhere in the harbor (Alternative #2) versus the federal channel only and capping elsewhere (i.e., the North Harbor; Alternative #3). Additionally, a Value Engineering (VE) study done as part of the Great Lakes Legacy Act pre-design work in 2006, recommended an in-situ cap in the Northern Harbor. Given this VE study, the Board recommends that the Region provide further justification in the decision documents for the Region's preference of Alternative #2, with its greater additional costs, rather than Alternative #3.

13. In the detailed cost information provided to the Board for the preferred Alternative #2, approximately \$2.7 million is shown for the in situ cap/cover placement. Approximately \$1.4 million of this total capital cost is for the residual sand cover layer over the bottom of the federal channel to achieve the SWAC goal. The Board recommends that the Region provide further

justification for the sand cover given that it appears the USACE will need to go back and dredge the harbor for navigational purposes. Additionally, the Board recommends that confirmation sampling be performed before determining the need for and extent of the sand cover. Further, the Board recommends that the Region consider making sampling a contingency in the decision documents with specific criteria included to define where, if at all, a sand cover would be placed. The Board notes that the use of cover material is one of the remedial options identified by the Region to meet the final sediment PCB concentration goal after dredging. The Region should consider whether monitored natural recovery may be appropriate in this situation to achieve the RAO instead of a thin-layer cap with dredging.

The Board appreciates the Region's efforts in working together with the potentially responsible parties, the State, and community groups at this site. We request that a draft response to these findings be included with the draft Proposed Plan when it is forwarded to your OSRTI Regional Support Branch for review. The Regional Support Branch will work with both your staff and me to resolve any remaining issues prior to your release of the Proposed Plan. Once your response is final and made part of the site's Administrative Record, then a copy of this letter and your response will be posted on the Board's website (<http://www.epa.gov/superfund/programs/nrrb/>).

Thank you for your support and the support of your managers and staff in preparing for this review. Please call me at (703) 603-8763 should you have any questions.

cc: J. Woolford (OSRTI)
E. Southerland (OSRTI)
Marcia Mulkey (OSRE)
J. Reeder (FFRRO)
R. Gonzalez (OSRTI)
Victoria van Roden (OSRTI)
NRRB members